HAGERMAN FISH HATCHERY

ANNUAL REPORT

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INTRODUCTION

Hagerman Hatchery is a state-owned resident trout production facility. The hatchery raises several strains of rainbow trout and various specialty species for statewide distribution. Hagerman Hatchery is the Idaho Department of Fish and Game's largest resident trout production facility. Built in 1947, it is located approximately 30 miles west of Twin Falls on the Snake River.

Funding is provided through licence money. There was approximately $371,900.00 used to rear the 1991 production, not including capital outlay expenditures.

The hatchery is staffed with 4 permanent employees, 2 permanent transport operators, and 20 months of temporary labor are available for use during the planting season.

The hatchery water supply consists of approximately 42 cubic feet per second (cfs) from Tucker Springs and approximately 61 cfs from Riley Creek. The Tucker Springs water serves the 2,520 cubic feet of rearing space in the hatchery building, 10,530 cubic feet of rearing space in fingerling ponds, and up to 118,560 cubic feet of rearing space in large production raceways. Riley Creek water supplies the 287,280 cubic feet of rearing space available in 12 additional raceways. The Tucker Springs water is a constant 59°F year-round, and Riley Creek fluctuates from 52°F to 62°F on an annual basis.

HATCHERY PRODUCTION

Hagerman Hatchery reared and planted 4,431,509 fish during 1991. Of these, 866,255 were planted at 8-10 inches long and 3,565,254 were planted at 3-8 inches long. The 8- to 10-inch fish were rainbow trout of various strains and sturgeon, while the 3- to 8-inch fish consisted of rainbow trout, tiger muskies, Kamloops trout, two strains of cutthroat, and cutthroat x rainbow hybrids (Table 1). In addition to the requests from the regions, 67,000 channel catfish (CC), 1,991 surplus brood fish from Ennis National Hatchery, 1,429,727 rainbow trout that were donated by Clear Springs Trout Co., and 126,750 coho that were donated by a local hatchery were planted by the hatchery crew.

The 393,847 pounds produced included 239,331 pounds of 8- to 10-inch fish and 154,516 pounds of 3- to 8-inch fingerlings were planted that were planted in Idaho waters. The cost of producing the average 11.25 per pound (5.7 inches) fish was approximately $0.92 per pound or $86.00 per 1,000 fish, or $0.016 per inch for the average fish reared (Table 2).

A total of 9,211,050 eggs were acquired to yield the fish produced. A total of 3,476,267 eggs were purchased, and the remaining 5,734,783 eggs were acquired from governmental sources at no cost (Table 3).

HATCHERY IMPROVEMENTS

Several hatchery improvements were completed this year. The hatchery crew enclosed the west perimeter of the large raceways with netting to help exclude any predators from this rearing area.

The air blower system designed by the hatchery crew and John Hinde, Inc. last year was expanded to encompass the entire Tucker Springs side of the large raceways to help keep the settleable solids from accumulating in the raceways. Funding was provided by the Bureau of Engineering.

The Engineering Bureau assisted in design and construction of a new storage building for Riley Creek equipment, repaired and spruced up the water chiller, installed new thermal doors for the office, shop, and hatchery building. The Bureau also had a new residence constructed to replace the residence that Dave May and family occupied. This house has a water-to-air heat pump, metal roof, and meets the specifications for the Idaho Power "Good Cents" program for energy efficiency.

Other improvements included modification and fine tuning of fish loading rates in the raceways, feeding rates, and diets for the 12 different species and strains of fishes reared this year at Hagerman.

Capital expenditures included two new 500-gallon fish tanks, **a** flat-bed trailer to haul them, a new fish pump, hydraulic components to operate the new pump as well as the existing fish pump, and various shop power tools.

The hatchery is still in dire need of money to enclose the large raceway rearing units to totally exclude the avian predators, and to install a pipeline to carry the Tucker Springs water to the raceways instead of the present open-ditch system.

These improvements were recommended by the Eagle Fish Health Lab in 1987 as part of an overall plan to control mortality at Hagerman, and these items have been cut from the budget for the past three consecutive years. These items are crucial steps needed to eliminate the IHN and other diseases that Hagerman has experienced for the past 12 years.

FISH HEALTH

The area of fish health at Hagerman Hatchery received the most effort and time from the hatchery personnel this year. We reevaluated the rearing environment, nutrition, medication usage, vaccine trials, and fine tuning of feed projections. Continuous monitoring of several feed and vaccine trials by the fish pathology staff resulted in better understanding of the progression of the epizootics that Hagerman has experienced in the past.

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The Eagle Fish Health Lab was called to do work at Hagerman 18 times during 1991. Eight epizootics were due to clinical Infectious Hematopoietic Necrosis infections, all of the visits revealed coldwater disease, and other diagnostics revealed included aeromonas, pseudomonas, bacterial gill disease, Infectious Pancreatic Necrosis, and gill bleeding probably due to an infection of Loma salmonae. Losses due to IHNV/coldwater disease accounted for over 1,500,000 fish of various sizes. These losses began soon after the ducks began using the Wildlife Management Unit ponds in mid-December 1989 and continued through the planting season. Historically, the IHNV/coldwater disease outbreaks begin during this same time period. All strains of rainbow were affected to some degree by this complex.

The IHN virus and losses due to bird predation are the main concerns at Hagerman Hatchery. Other losses were related to bacterial/environmental gill disease and other predators.

Continuing efforts by Oregon State University and Bio-Med, Inc. to develop a vaccine against IHN resulted in a trial vaccination again at Hagerman this year. Hayspur strain rainbow were vaccinated with an experimental IHN vaccine, and a similar group was vaccinated with an experimental coldwater disease bacterin. Results indicated that both of the vaccinated groups had approximately 14% recorded mortality and the non-vaccinated controls had 25% recorded mortality during the test period. A final report will be available from the Eagle Fish Health Lab.

Additional work to control coldwater disease included feeding the early fry Terramycin in the diet for 14 days in an attempt to control the causative bacteria invasion before it became entrenched in the lightly-vascularized tissues of the fish. If the bacterial invasion is not controlled early, it appears that a seed area is not effected by treatments later in the life of the fish and can contribute to the losses experienced at about 3 inches in length. Additionally, work was done with a second antibiotic, Oxylinic acid, topcoated, and fed to the fish approximately two weeks prior to the time that the fish historically break with coldwater disease. Results varied with little predictable protection.

Overall fish survival from eyed egg to stocking is shown in Table 4.

FISH FEED

The fish produced during fish year 1991 were fed a total of 544,271 pounds of feed acquired from the contract sources, Rangens, Inc., Bio-products, and Biokyowa (Table 5). The overall conversion was 1.38 pounds of feed to produce 1 pound of fish. One feed comparison test was completed during the year. Rangen's fry feed was compared to Bio-diet, Inc. fry feed. The draft summary report will be available in mid-summer 1992. Other testing using diets revolved around the use of medications in the diet to control coldwater disease as indicated in the fish health section of this report.

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PUBLIC RELATIONS

Hagerman Hatchery receives a large number of visitors and sportsmen throughout the year. The hatchery is surrounded by the Hagerman Wildlife Management Area (WMA). The WMA provides a large variety of outdoor experiences ranging from fishing and hunting, to watchable wildlife viewing, to family picnic uses.

The hatchery and WMA complex needs to have a comprehensive visitor use plan established to maximize visitor appreciation and the educational value of the area. Approximately 55,000 visitors toured the facility and used the surrounding public grounds this year. This year, a free fishing day clinic was attended by approximately 150 people. The hatchery crew, regional personnel, and others helped these people learn the basics of fishing. This year, a series of stations were set up where the public could learn about different aspects of the sport of fishing. This was met with great success. Thanks goes to all who participated in this successful event.

Hatchery personnel were called upon to give school tours during the spring, and several talks were presented to the local and regional Optimist Clubs and other civic organizations.

SPECIAL PROJECTS

Fish Tagging Operations

The hatchery crew participated in several tagging operations during the year. Seven of the Region 4 waters that Hagerman planted with catchables received jaw-tagged fish. The hatchery crew placed 4,050 jaw tags on fish that went to these waters. A hat was given out as an incentive for the fishermen to return the tags.

A portion of these tags were used to determine fisherman preference to the size of fish kept in the creel in a cooperative effort with fish research personnel. Fish destined for Rock Creek in Twin Falls County were sorted into two distinct size classes, jaw-tagged, and planted randomly in the creek. Intensive creel evaluation was done, and data was collected by research and hatchery personnel.

Additionally, all of the 23,699 fish stocked in the South Fork of the Boise River from Pine to the headwaters received adipose fin clips. Lastly, for Region 4, 1,000 blue floy tags were inserted into fish from each of the two plants made into Salmon Falls Creek Reservoir, and 1,000 brown floy tags were inserted into fish representing each of the two plants into the Snake River at Bell Rapids access. All of these fish were tagged in an effort to calculate the return-to-the-creel on these fish.

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Cascade Reservoir received 105,440 Kamloop x steelhead trout that were clipped with a right maxillary clip, 111,220 Kamloop trout that were marked with yellow grit dye, 148,720 Kamloop trout that were marked with orange grit dye, and 139,500 Kamloop trout that were marked with red grit dye. The Kamloop trout were 6-8 inches in length and the Kamloop x steelhead trout were 9 inches in length. This program is an effort to obtain survival of the two sizes of fish at planting.

C.J. Strike Reservoir received 26,390 5.5-inch Kamloop x steelhead trout that were left ventral fin clipped. American Falls Reservoir received 16,600 9-inch Hayspur strain rainbow that were adipose clipped as part of a return to the creel study. And lastly, 1,200 of the 64,220 9-inch fish that Ririe Reservoir received were jaw tagged. Again, as part of a return-to-the-creel evaluation.

The hatchery crew worked in *conjunction* with the College of Southern Idaho to PIT tag 1,078 of the brood year 1989 sturgeon that were planted this year into the Snake River. These tags will allow biologists to gather much needed information about these fish. Another 133 sturgeon were planted into Lake Walcott and the Boise River which were not PIT tagged.

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ACKNOWLEDGMENTS

Thanks to the permanent hatchery staff, Ralph Steiner, David May, and Kevin Price; to the transport operators, Ken Taylor and Ralph Taylor; and to to the temporaries, Karen Frank, Lee Grindinger, and Bill Hanlon.

The regional fisheries and enforcement personnel, Charles Corsi, Fred Partridge, Gregg Mauser, Richard Holman, and Gary Hompland, also deserve our gratitude.

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Table 1. Fish distribution from Hagerman State Hatchery, 1991.

Species/ Size	Number	Pounds	Percent Planted in Region 1	2	3	4	5	6
KS 8.5-9"	215,046	69,685	0	0	60.5	22.2	6.5	10.8
R9 9-14"	382,088	96,264	0	14.6	14.7	36	5.7	29.1
R1 9"+	289,657	74,500	0	11.2	18.3	46.2	24.3	0
SUBTOTAL Catchables	887,759	239,331		9.9	27	36	11.9	15.1
C3 3"	269,000	1,995	0	0	0	94.5	0	5.5
C4 3"	4,839	38	0	0	0	100	0	0
K1 3-7"	802,990	49,472	2.5	0	68.4	20.8	8.2	0
KS 4-5"	853,560	26,455	23.5	0	68.2	8.4	0	0
R7 3-6"	125,500	5,540	0	0	53.8	46.2	0	0
R9 3-8"	1,182,511	67,455	7.1	0	39.3	26.2	6.5	20.8
RC 3"	285,000	3,168	0	0	0	0	0	100
*TM 6"	20,210	493	5.9	0.7	0	0.1	7.4	34.6
WS	1,108	661	0	0	3.1	86.2	10.6	0
SUBTOTAL Fingerlings	3,543,610	154,516	8.6	.004	46.9	24.4	4.1	16.6
TOTAL	4,431,369	393,847	6.8	1.9	42.8	27.8	5.5	15.3

*10,120 shipped to Colorado

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Table 2. Costs of fish produced at Hagerman State Hatchery, FY 1991. Costs reflect all costs budgeted except capitol outlay, and are based on a weighted average of $0.016 per inch of fish planted ($371,900/23,228,337 inches of fish planted).

Species	Actual Production	Weight Pounds	Costs to Produce and Plant	Cost per 1,000
KS 8.5-9"	215,046	69,685	30,801.02	143.23
R9 7.75-14"	472,961	109,414	63,252.82	133.74
RE 7-9"	178,248	32,165	21,994.18	123.39
SUBTOTALS	866,255	211,264	116,048.02	133.97
C3 3"	269,000	1,995	12,912.00	48.00
C4 3"	4,839	38	299.27	61.85
K1 3-7"	802,990	49,472	69,085.97	86.04
KS 4.5-5"	853,560	26,435	62,157.44	72.80
R9 3-4.75"	807,596	16,740	51,770.26	64.10
R9 7-7.5"	285,542	38,839	33,306.74	**116.65**
R7 2-4"	58,000	440	2,581.44	44.51
R7 6"	67,500	5,000	6,500.00	96.29
RC 3.25"	285,000	3,168	14,820.00	52.00
TM 6"	20,210	493	2,000.16	98.96
WS 18"	1,108	661	419.10	378.25
SUBTOTALS	3,453,344	143,281	255,851.98	74.09
TOTALS	4,320,599	**354,545**	$371,900.00	86.00

Table 3. Numbers of eyed eggs received, species, and source.

Species/ Strain	Number Received	Date Received	Source
Rainbow/ Kamloop	1,597,957	12/90-1/91	Gloyd Springs Washington
Rainbow/ Erwin	481,644	9/90	USFWS/ Ennis, MT
Rainbow/ Eagle Lake	157,159	2/91	USFWS/ Ennis, MT
Rainbow/ Eagle Lake	255,300	2/91	USFWS/ Creston, WY
Rainbow/ Hayspur	3,465,473	1/90-2/91	IDFG/ Hayspur
Rainbow/ Kamloop	290,040	11/90-1/91	IDFG Hayspur
Rainbow, Kamloop x steelhead	1,878,310	6/90-5/91	Troutlodge California
RC Hybrid	583,292	4/91	IDFG Ashton
Henrys Lake Cutthroat	301,475	5/91	IDFG/ Henrys Lake
Snake River Cutthroat	140,400	7/91	Wyoming DNR Tensleep, WY
Tiger Muskies/	60,000	4/91	Penn DNR/ Pennsylvania
TOTALS	9,211,050		

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Table 4. Fish survival from eyed egg to plant, 1991.

Species/ strain	Eggs received	Number planted	Percent survival
KS		1,878,310	
Troutlodge	Inventory 1/1/92=	104,000	**62.5**
RE	481,644	178,248	37.0
Erwin			
R9	3,465,473	1,564,599	45.1
Hayspur			
R7	412,459	125,500	30.4
Eagle Lake			
K1	1,887,997	802,990	42.5
Hayspur and Gloyd Springs			
RC	583,292	285,000	
Ashton	Inventory 1/1/92=	92,510	65.0
C3	301,475	269,000	89.2
Henrys Lake			
C4	140,400	4,839	3.4
Tensleep, WY			
TM	60,000	20,210	33.7
Total	9,211,050	4,411,502	
	Inventory 1/1/92=	208,410	
	GRAND TOTAL	4,619,912	50.1

Table 5. Fish feed used during 1991 at Hagerman Hatchery.

Size	Source	Pounds	Cost/ Pound	Cost
Starter #1, #2, #3	Rangens	24,150	$0.3900	$9,418.50
#1/TM,#2/TM, #3/TM	Rangens	6,600	$0.5200	$ 3,432.00
#4 Crumble	Rangens	47,250	$0.2650	$ 12,521.25
3/32" Pellet	Rangens	220,610	$0.2125	$ 46,879.63
1/8 " Pellet LO PHOS	Rangens	5,460	$0.3525	$ 1,924.65
5/32" Pellet	Rangens	215,000	$0.2125	$ **45,687.50**
5/32" Pellet/TM	Rangens	6,000	$0.3425	$ 2,055.00
1/4"float Pellet	Rangens	50	$0.31	$ 15.50
Soft-Moist Starter	Rangens	616	$0.7250	$ 446.60
Soft-Moist 1/32	Rangens	1,595	$0.6550	$ 1,044.73
Soft-Moist 3/64	Rangens	110	$0.6250	$ 68.75
Soft-Moist 1/16	Rangens	55	$0.5900	$ 32.45
Soft Moist 1/8	Rangens	440	$0.5600	$ 246.40
Soft Moist 3/32,5/32	Rangens	275	$0.5600	$ 154.00
Biodiet #1, #2, #3	Bioproducts	440	$0.8182	$ 360.00

Table 5. Continued.

Size	Source	Pounds	Cost/ Pound	Cost
Biodiet #2/TM, #3/TM	Bioproducts	88	$0.9642	$ 84.85
Biodiet 1.5 mm	Bioproducts	44	$0.6410	$ 28.21
Biodiet 2.5 mm	Bioproducts	88	$0.5910	$ 52.00
Abernathy 1/8		Free/ surplus from Dwarshak NFH		
Totals		544,271	$0.2287	$124,452.04